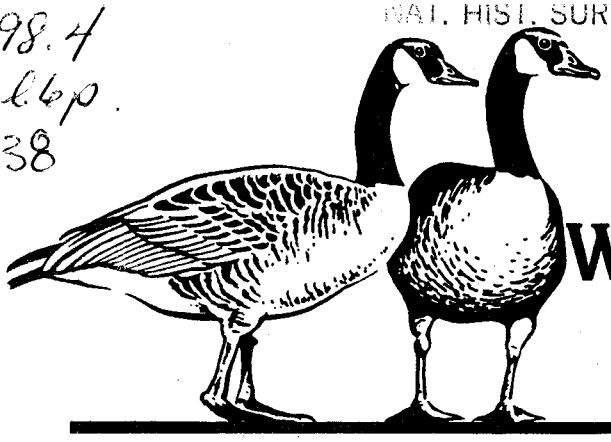
ILLINOIS

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

PRODUCTION NOTE

University of Illinois at
Urbana-Champaign Library
Large-scale Digitization Project, 2007.



PERIODIC REPORT NO. 38

April, 1983

WATERFOWL PROGRAM

ILLINOIS DEPARTMENT OF CONSERVATION
DIVISION OF FISH AND WILDLIFE RESOURCES

WINTER WEIGHTS OF CANADA GEESE IN SOUTHERN ILLINOIS DURING 1982-83.

Bridgett L. Estel, Waterfowl Technician

Abstract: A total of 1,954 Canada geese were trapped and weighed at Union County and Horseshoe Lake Refuges in southern Illinois. Weights were taken from 18 October 1982 to 22 March 1983. Mean weights of both adult and immature geese gradually increased through February. The last major migration north from southern Illinois occurred in mid-February. Disabled geese and an influx of the smaller subspecies of the Canada goose resulted in declining average weights in March. Weather conditions were very mild throughout the winter of 1982-83. No persisting snow cover occurred. Crop and natural food resources were abundant and readily available throughout the season. Comparisons with weights taken in the severe winters of 1977-78 and 1981-82 show that Canada goose body weights are closely correlated with food availability. When abundant food supplies existed in the winter of 1982-83, mean weights of Canada geese continued to increase despite lowering temperatures. The availability of food was a much more influential factor in determining body weight than were normal winter fluctuations in temperature.

INTRODUCTION

This study examines winter weight variances in the Canada goose (Branta canadensis) and the relationship of these variances to environmental conditions and migrational activity. Geese were weighed from 18 October 1982 to 22 March 1983, at Union County Refuge and Horseshoe Lake Refuge in southern Illinois. Union County Refuge is a 6,200 acre area situated in Union County and Horseshoe Lake Refuge is a 7,900 acre area in Alexander County. These refuges are state-owned and managed by the Illinois Department of Conservation. Management is primarily directed toward accommodating the Mississippi Valley Population of Canada geese that winters in southern Illinois each year (Hanson and Smith, 1980).

METHODS

Two methods of trapping Canada geese were used in this study. Throughout October and November, geese were captured using cannon nets. Three cannon net

sites were maintained on the Union County Refuge. In December and throughout the rest of the study, swim-in traps were used for capturing geese at both Union County and Horseshoe Lake Refuges.

During the Canada goose hunting season in southern Illinois, from 8 November to 16 December 1982, geese were weighed at the Union County check station. Weights of harvested birds were used to supplement those of live-trapped geese in December when flood conditions slowed trapping efforts.

All live geese were aged, sexed, and banded. Weights were recorded in grams and were accurate within ten grams. Retrapped geese were aged, sexed and reweighed. These subsequent weights allowed some 320 geese to be monitored on at least two occasions throughout the winter of 1982-83.

Weights of geese that were obviously Richardson's geese (B.c. hutchinsii) or some other small subspecies were not used in calculating averages. This determination was made of weights less than 2300 grams and by visual examination of morphological characteristics. All geese weighing over 2300 grams were included in the calculation of monthly mean weights. Because of the overlap in the weights of interior and giant Canada geese and the difficulty in readily separating these two races (Hanson, 1967), no attempt was made to eliminate giant Canada geese from the calculation of mean weights. Due to the large sample size and a probable reduced migration of giant Canada geese under mild weather conditions in 1982-83, the small number of giants in the flock should have had little or no significant effect on overall mean weights.

Daily temperatures and precipitation figures were obtained for September, 1982 through March, 1983 from the weather station at the Cape Girardeau Municipal Airport in Cape Girardeau, Missouri.

RESULTS AND DISCUSSION

A total of 1,954 Canada geese were weighed at Union County and Horseshoe Lake Refuges in southern Illinois during the winter of 1982-83 (Table 1). Weights were averaged on a monthly basis for the five month period from October 1982 through March 1983 (Table 2). Subsequent weights from retrapped geese throughout the season revealed fluctuations similar to those found in the monthly mean weights of all Canada geese weighed. Overall weights gradually increased from October when the first Canada geese were weighed to mid-February when the last large migration out of southern Illinois occurred. Large numbers of migrating geese arrived in Wisconsin from 19-21 February 1983. Geese weighed in late February and early March, after the major spring migration, showed a noticeable decline in weight (Figure 1). Many of these geese were obviously thin, possibly suffered from lead poisoning and other waterfowl diseases, and several were crippled. By mid-March many comparatively small but apparently healthy geese were being trapped. It is probable that these geese were of a smaller subspecies of Canada goose migrating from wintering areas south of Illinois (Bellrose, 1980). Raveling (1968) mentioned an influx of Canada geese of a smaller subspecies into southern Illinois during migrations. He proposed that the weights of these geese might have influenced the apparent loss of weight in February and March previously found by Elder (1946) and other investigators weighing geese in southern Illinois.

Weekly weather conditions, including average temperatures and total precipitation, are indicated in Table 3. Overall weather conditions for the winter of 1982-83 were extremely mild with no significant or lasting snowfall. Flood conditions existed in late November and lingered throughout much of December. The close of the hunting season on 16 December contributed to a wide dispersal of the goose flock after this date.

Thousands of Canada geese remained in Wisconsin throughout the winter and were not forced to migrate further south as usual in December. A winter storm in mid-January did push some geese south and a large number arrived in southern Illinois shortly thereafter. For the most part, by late January an unusual situation existed where migrations were occurring both north and south.

Due to the mild weather conditions, food supplies at Union County and Horseshoe Lake were never greatly depleted as in previous years. In the winters of 1977-78 and 1981-82 food resources were so depleted that feeding the geese became necessary. The winter of 1977-78 was one of the worst on record in southern Illinois with snow cover persisting from 10 January to 27 February. The winter of 1981-82 was also severe with snow cover occurring throughout the first two weeks of February and temperatures falling below zero. Table 4 compares average weights taken during these severe winters to weights taken during the mild winter of 1982-83. Weights taken in 1978 before feeding began on 3 February were an average of 820 grams or 1.76 pounds below those of geese weighed during 1-19 February 1983. During this same period in 1982, geese were an average of 320 grams lighter than in 1983. In early February 1983 both adult male and adult female Canada geese were 29 percent heavier than in February of 1978. Immature males and immature females were both 26 percent heavier in 1983 than in 1978. Once feeding was initiated in 1978 and 1982, steady and substantial weight increases occurred within the first two weeks (D.D. Thornburg, unpublished data).

Weights of Canada geese taken in the winter of 1964-65 in southern Illinois showed no significant change in weights of immatures but revealed a loss of weight in adult birds (Raveling, 1968). Adult males and females lost approximately 93 and 140 grams, respectively, between November-December and February-March. Elder (1946) also found winter weight losses in adult and immature geese in January. Raveling (1968) makes no mention of weather conditions. Elder (1946) states only that it was cold. Raveling et al. (1972) documented that Canada geese do not become inactive until temperatures are reached which have been predicted to be the minimum temperatures at which they can survive for extended periods. The predicted lowest temperature for long-term survival is 14°F for B.c. interior (Raveling et al., 1972). Steadily decreasing temperatures from September 1982 to February 1983 (Figure 2) did not appear to facilitate any decrease in mean body weight of the geese. In fact, as stated previously, mean weights continued to increase through February (Figure 1). Adequate crop and natural foods were available through the entire winter of 1982-83.

Raveling (1968) emphasized the importance of food availability in evaluating winter weight losses. Elder (1946) stated that crop foods had been exhausted for several weeks by mid-December of his study of weights. Weights taken by Elder (1946) showed a loss of weight in January then increased weights through February and March.

Elder (1946) indicated that males are heavier than females and adults heavier than juveniles. Weights taken in 1982-83 indicated that immature male Canada geese weigh more than adult females by December and from that point on. Average weights of interior Canada geese published by Bellrose (1980) also show that immature males weigh slightly more than adult females.

LITERATURE CITED

Bellrose, F.C. 1980. Ducks, Geese, and Swans of North America. 2nd Edition. Stackpole Books, Harrisburg. 540pp.

Elder, W.H. 1946. Age and Sex Criteria and Weight of Canada Geese. J. Wildl Manage. 10:93-111.

Hanson, H.C. 1967. Characters of age, sex, and sexual maturity in Canada Geese. Ill. Natu. Hist. Surv. Div. Biol. Notes No. 49. 15pp.

----------, and R.H. Smith. 1950. Canada geese of the Mississippi Flyway, with special reference to an Illinois flock. Bull. Ill. Nat. Hist. Surv. 25 (art. 3):59-210.

Raveling, D.G. 1968. Weights of Branta canadensis interior during winter. J. Wildl Manage. 32:412-414.

Raveling, D.G., W.E. Crews, and W. D. Klimstra. 1972. Activity patterns of Canada geese in winter. Wilson Bull. 84:278-295

Table 1. Total numbers of Canada geese weighed in southern Illinois in the winter of 1982-83.

Area	Age	Sex	No. Weighed
Union County			
	Adult	Male	255
	Adult	Female	309
	Immature	Male	413
	Immature	Female	371
Total			1,348
Alexander County			
	Adult	Male	66
	Adult	Female	117
	Immature	Male	216
	Immature	Female	207
Total			606
Grand Total			1,954

Table 2. Mean monthly weights of Canada geese wintering at Union County Refuge and Horseshoe Lake Refuge in 1982-83.

Month	Adult Male	Sample Size	Adult Female	Sample Size	Immature Male	Sample Size	Immature Female	Sample Size
October	3,880	19	3,530	19	3,500	16	3,160	17
November	4,130	47	3,590	55	3,580	82	3,150	73
December	3,940	18	3,520	21	3,730	49	3,180	33
January	4,170	80	3,680	114	3,890	211	3,410	189
February	4,180	148	3,630	204	3,760	237	3,280	231
pre-migration 1-19 Feb.	4,200	137	3,650	188	3,760	193	3,310	199
post-migration 20-28 Feb.	3,890	11	3,460	16	3,760	44	3,100	32
March	3,850	9	3,400	13	3,560	34	3,100	35
Mean wt.	4,120		3,620		3,760		3,290	
Mean wt. in lbs.	9.1		8.0		8.3		7.2	

Table 3. Weekly weather conditions on Canada goose wintering areas in southern Illinois for 1982-83.

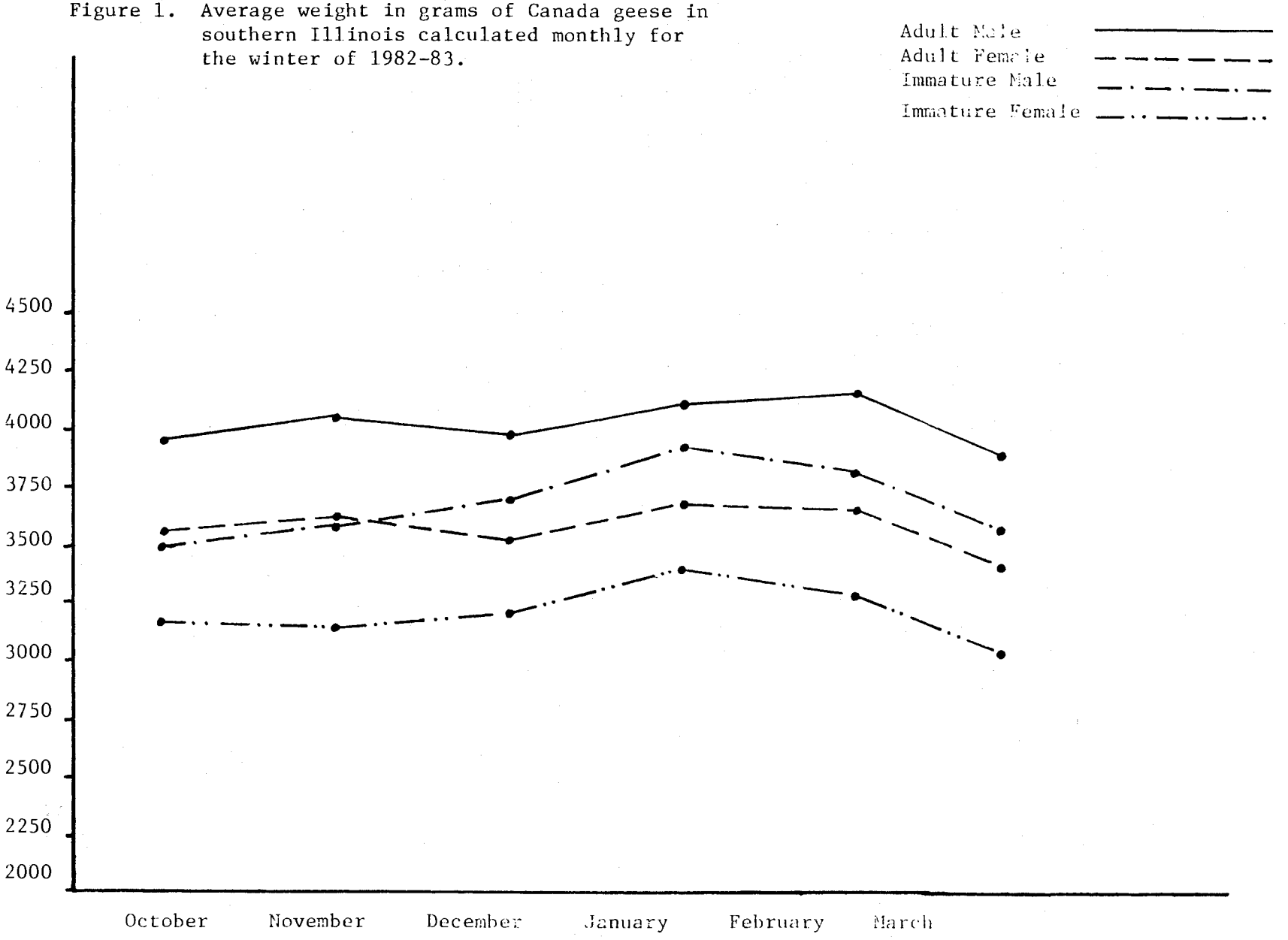
Date	Average Daily Temp.	Total Rainfall	Total Snowfall	Average Weekly High	Average Weekly Low
09/16/82-09/23/82*	62	.42		74	58
09/24/82-09/30/82	72	.16		76	53
10/01/82-10/07/82	70	1.17		81	59
10/08/82-10/14/82	61	.59		71	51
10/15/82-10/21/82**	55	.22		68	42
10/22/82-10/28/82	48	T		64	31
10/29/82-11/04/82	58	.17		66	49
11/05/82-11/11/82	53	T		64	42
11/12/82-11/18/82	40	.60		51	30
11/19/82-11/25/82	49	1.73		55	42
11/26/82-12/02/82	52	2.67		58	47
12/03/82-12/09/82	48	4.12		56	42
12/10/82-12/16/82	33	.64		39	26
12/17/82-12/23/82	44	.20		51	38
12/24/82-12/30/82	45	7.36		52	38
12/31/82-01/06/83	34	.00		42	26
01/07/83-01/13/83	36	.03	T	44	28
01/14/83-01/20/83	30	.15	T	37	22
01/21/83-01/27/83	35	.49	T	37	32
01/28/83-02/03/83	38	.90	.3	44	31
02/04/83-02/10/83	32	.12	.9	38	26
02/11/83-02/17/83	41	.00		52	29
02/18/83-02/24/83***	50	.12		59	40
02/25/83-03/03/83	46	.00		59	33
03/04/83-03/10/83	50	1.13	.7	55	44
03/11/83-03/17/83	49	.10		60	39
03/18/83-03/24/83	41	.59	T	48	34

* First Canada geese arrived at Union County Wildlife Refuge
** First Canada geese trapped on 18 October 1982.
*** Last large migrations occur from Union County and Horseshoe Lake Refuge

Table 4. Comparison of mean weights in grams for Canada geese in early February of three different years on wintering areas in southern Illinois.

Year	Weather Conditions	Mean Weight							
		Adult Male	Sample Size	Adult Female	Sample Size	Immature Male	Sample Size	Immature Female	Sample Size
1977-78	Extremely Severe	3,260	50	2,820	53	2,980	24	2,620	14
1981-82	Severe	3,820	15	3,420	24	3,420	31	2.990	17
1982-83	Mild	4,200	137	3,650	188	3,760	193	3,310	199

Figure 1. Average weight in grams of Canada geese in southern Illinois calculated monthly for the winter of 1982-83.



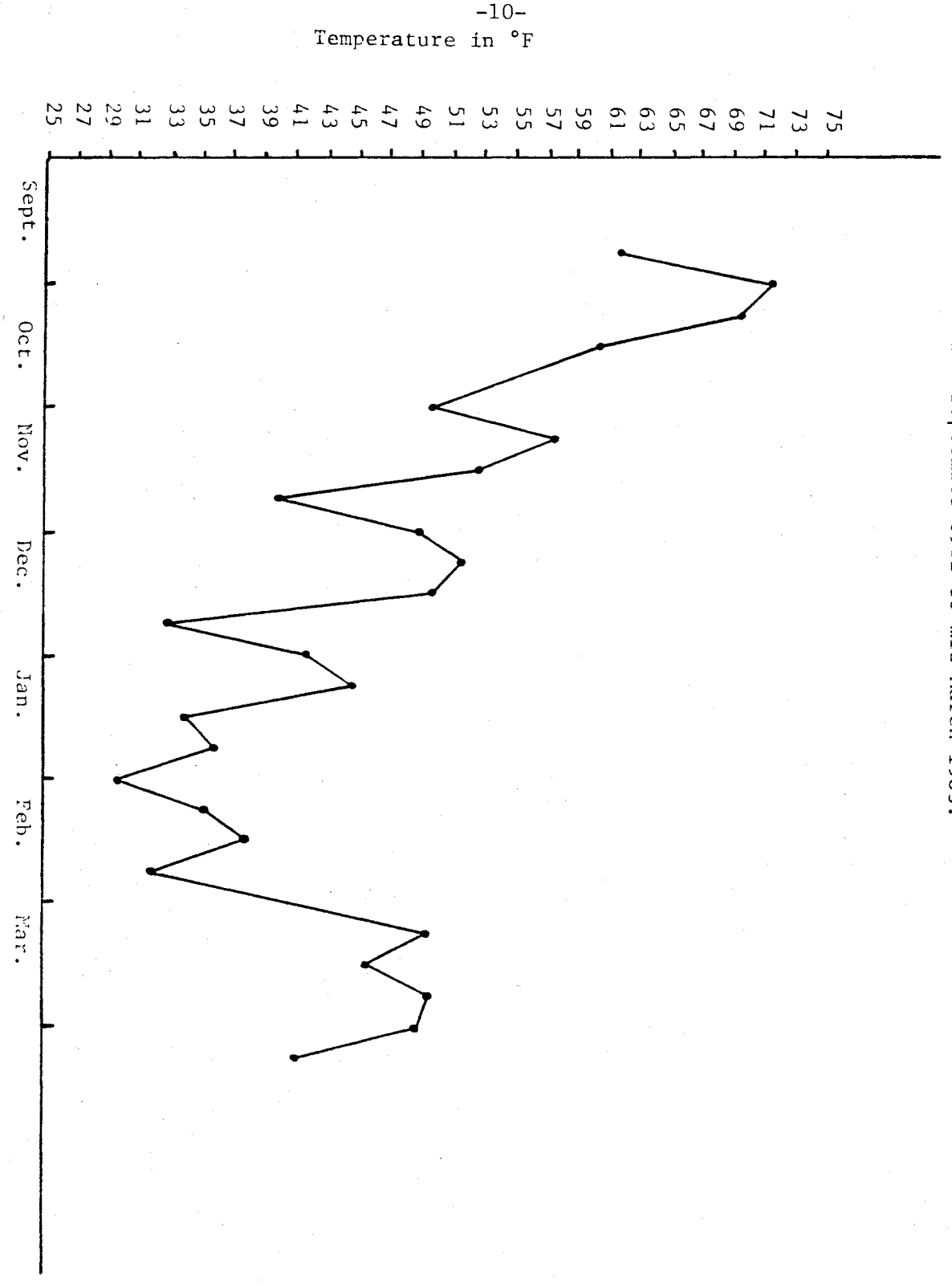


Figure 2. Average daily temperatures in degrees Fahrenheit in southern Illinois calculated weekly from mid-September 1982 to mid-March 1983.

Printed by authority of the State of Illinois. 400-5-83
The Dept. of Conservation is an equal opportunity employer.